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ABSTRACT

Beck's (1967) hypotheses concerning depression build upon notions that a depressed person's cognitions differ from those of nondepressed persons and that a relationship exists in which depressive cognitions assume primacy over mood. A study was conducted to test Beck's hypotheses and to examine the roles that cognition and mood play in depression. The experiment was a 2 x 4 design in which two groups (72 depressed psychiatric inpatients, 61 nondepressed psychiatric inpatients) and 4 conditions were combined factorially. The four conditions were Velten, a cognitive-based condition in which subjects read mood-elating self-referent statements; Comedy Film, a noncognitive condition in which subjects viewed a mood-inducing film; and two control conditions. Pre- and post-tests consisted of the Multiple Affect Adjective Checklist and the Dysfunctional Attitude Scale. The results revealed that dysfunctional attitudes or cognition of clinically depressed subjects differed significantly from those of nondepressed persons and that cognitions became increasingly dysfunctional as level of depression increased. When mood and cognition were both manipulated, cognitions of depressed subjects were modifiable. When mood alone was manipulated, mood changed and subjects became less depressed; no change in these subjects' cognitions was evident. These findings have implications for treatment. (NB)

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MOOD INDUCTION AND BECK'S THEORY OF DEPRESSION: A TEST OF MAJOR HYPOTHESES

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Paper presented at the Annual Convention of the American Psychological Association, 94th, Washington, DC, August 22-26, 1986.

Summary

1) Title of Presentation: Mood Induction and Beck's Theory of Depression: A Test of Major Hypotheses. (2.8 psychopathology, 2.8.1 depression/suicide).

In both a descriptive and explanatory fashion since 1967, Beck and colleagues (Beck, 1967; 1976; Beck, Rush, Shaw, & Emery, 1979) have advanced hypotheses which build upon notions that a depressed person's cognitions are different from those of nondepressed individuals and that a relationship exists in which depressive cognitions assume primacy over mood. What Beck suggests is not new to psychology. In particular, his notion regarding the relationship between cognition and mood has been the subject of much debate over the past few decades (e.g., Ellis, 1985; Lazarus, 1968; Lazarus, 1982; Lazarus, Kanner, & Folkman, 1980; Zajonc, 1984).

The issues surrounding this controversy remain unresolved (Zajonc, 1984) and are currently being examined, in part, within the framework of mood induction research (Hale & Strickland, 1976; Isen, Shalker, Clark, & Karp, 1978; Snyder & White, 1982; Teasdale & Fogarty, 1979; Teasdale & Russell, 1983). A closer look at these studies, however, reveals that results are mixed: some support a linear relationship between the constructs in which one variable assumes primacy over the other, others argue for a reciprocal process commonly depicted as affect <---> cognition. One reason why experimenters have not been able to elucidate the relationship between cognition and mood may be that research designs preclude generality to

clinical populations. Beck's hypotheses refer to clinical individuals suffering from depression; prototypic research typically studied nonclinical populations. As yet, there is no clear assurance that these two groups are comparable in terms of level and degree of depressed mood or of depressive cognitions.

It follows that an experimental design which integrates mood induction strategies with hypotheses related to Beck's theory of depression is needed. Clearly, inferences made about cognition common to clinical depression in the context of this paradigm will remain speculative until further study is conducted using psychiatric patients. With clear delineation of variables and systematic procedures, a design that integrates Beck's hypotheses can be constructed and tested using a clinical population in order to better examine the roles cognition and mood play in depression. The present study was designed to take these factors into account.

Method

Subjects

Of the 133 psychiatric inpatients who participated in this study, 114 were from Ohio State University's psychiatric hospital, and 19 from Harding Hospital of Columbus, Ohio. Ninety-eight women and 35 men were involved, 90% causcasian and 10% black. Age range was 18 to 65 years (M=32.70 years). Group assignment for the two diagnostic groups (i.e., depressed and nondepressed) was as follows. For the depressed inpatients (n=72), criteria were (a) scores $\geq$16 on the Beck Depression

Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), b) diagnosis of Major Depressive disorder according to the Research Diagnostic Standards (RDC; Spitzer, Endicott, & Robins, 1978), c) nonpsychotic type, d) no treatment with electroconvulsive therapy within the past year, and e) no evidence of either organic brain disorder or mental retardation. The nondepressed group (n=61) was composed of patients who scored $\leq$10 on the BDI and who did not meet the RDC criteria for any diagnostic category of mood disorder. Diagnoses of nondepressed patients showed a range of different disorders, excluding acute psychosis, organic brain disorder, mental retardation, substance abuse, and eating disorders. The RDC was administered by the Experimenter (E) and the DSM-III by staff psychiatrists, both at time of admission. When scoring the RDC, the E remained blind to DSM-III diagnoses. Temporal scoring of the RDC, followed by the BDI, remained invariant across all subjects (Ss). The percentage of overall agreement between RDC and DSM-III diagnoses of Major Depressive Disorder and Major Depression, respectively, was 61% or 81 out of 133 cases, $\chi^2(1)=8.07, p < .01$.

Procedure

The experiment was a 2 X 4 design in which two groups (i.e., 72 depressed inpatients; 61 nondepressed inpatients) and four conditions (i.e., two experimental and two control) were combined factorially. Subjects, blind to the purpose of the study, were assigned to one of four conditions such that there were no less than 30 Ss in each condition. In the experimental condition called Velten, Ss read 60

self-referent statements that were designed to be mood elating (Velten, 1967). The procedure has been described as cognitive-based (Hale & Strickland, 1976) in that cognition and mood are directly manipulated. In a second experimental condition labelled Comedy Film participants viewed a 12 minute film (adapted from Isen & Gorgoglione, 1983) which has been demonstrated in previous research to be a stable means of mood induction (A. Isen, personal communication, April 24, 1984; Isen & Gorgoglione, 1983). Here, no direct manipulation of cognition was expected to take place. Two control conditions were either reading Velten neutral statements or viewing a neutral film. Pre- and post-tests consisting of the Multiple Affect Adjective Checklist (MAACL; Zuckerman & Lubin, 1965) to assess mood and the Dysfunctional Attitude Scale (DAS; Weissman, 1976; Weissman & Beck, 1978) to assess cognition were administered in randomized order immediately before and after each of the four procedures. Following one experiment, Ss completed a locally developed Debriefing Questionaire, were debriefed, and left.

Results

Univariate analyses of variance and Chi square analyses performed on the measures used to classify Ss as depressed/nondepressed (i.e., BDI and RDC), the two pre-tests of mood and cognition (i.e., MAACL and DAS), and demographic variables of sex, race, age, education, marital status, number and length of previous hospitalizations showed no significant differences between the four conditions at time of pre-test. Univariate and Chi square analyses revealed no significant

differences between diagnostic groups in terms of the above demographic variables with the exception of sex, with significantly more females in the depressed group (80%) than in the nondepressed group (60%), χ^2 (1,133) = 8.66, $p < .01$. As expected, patients classified as depressed using the BDI scored significantly higher than did the nondepressed group, F (1,130) = 270.70, $p < .0001$.

The prediction that clinically depressed Ss would have significantly more dysfunctional attitudes as compared to nondepressed Ss at time of pretest was confirmed, F (1, 131) = 32.38, $p < .0001$. Further, intercorrelations between Ss' level of depression and degree of dysfunctional attitudes showed that a linear relationship existed between BDI and DAS scores at time of pretest, $r = .57$, $p < .0001$, such that, as mood became more depressed, attitudes became increasingly dysfunctional.

A 3-way mixed analysis of variance with one repeated measure and unequal Ns (Diagnostic Group X Condition X Time) was performed on the pre- and post- tests to examine major hypotheses. Beck's notion regarding the primacy of cognition over mood would predict that a change in cognition is a necessary and sufficient condition for changes in mood to occur. In other words, in order for a S to feel less depressed, attitudes must first become less dysfunctional. Results of simple effects tests presented in Table 1 showed that

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Insert Table 1 about here

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the only Ss who evidenced a change in attitudes over time were Ss in the Velten condition, F (1, 125) = 37.05, $p < .0001$. Concurrently, Ss in this condition also became significantly less depressed over time, F (1, 125) = 15.74, $p < .0001$.

In the Comedy Film condition, where mood alone was not subject to change, results were shown to be contrary to expectation. In accordance with Beck's theory, it was predicted that when depressive cognition is not directly manipulated, no change in depressed mood should be effected. Results based upon this condition show that mood could change over time, F (1, 125) = 17.55, $p < .0001$, in the absence of any significant change in cognitions. Results of the two control conditions, Neutral Velten and Neutral Film, revealed no significant change in mood or attitude over time for either condition across both depressed and nondepressed groups. Differential response over time to the experimental and control procedures by diagnostic group was examined in terms of the 3-way interaction. Non-significant 3-way interactions were evident in terms of MAACL (See Fig 1) and DAS scores (See Fig 2) which meant that Ss classified as depressed and nondepressed responded similarly in terms of condition-mediated mood and cognitive change over time.

Insert Figures 1 and 2 about here

Relationship between Subjective and Actual Outcome

To assess the success of the experimental manipulations, Ss were asked at time of debriefing to state the purpose of the study. Results show that 10% of the Ss indicated the true purpose of the study (i.e., to change mood and/or cognition). To determine differences, if any, between the two diagnostic groups in terms of relative perception of change, a comparison of subjective impression concerning degree and direction of change with actual outcome was made. Pearson product-moment correlations were significant at the .0001 level between Velten and Comedy Film Ss' impressions that they became less depressed, r=.51, and actual outcome. Of interest was the finding that only Ss in the Velten condition correctly predicted the direction of change in cognition, r=.29, $p < .05$. For Ss in the Comedy Film condition, a change in cognition was indicated whereby cognition became less dysfunctional, when actual outcome revealed no significant change in this variable over time.

Discussion

Overall, three major findings emerged. It was shown first that dysfunctional attitudes or cognition of clinically depressed subjects differed significantly from those of nondepressed individuals and that cognitions became increasingly dysfunctional as level of depression increased. These findings correspond to those of others (Persons & Rao, 1985; Silverman, Silverman, & Eardley, 1984; Weissman, 1976).

Second, when mood and cognition were both manipulated (i.e., Velten condition) cognitions of depressed subjects were shown to be modifiable. Third, when mood alone, and not cognition, was manipulated (i.e., Comedy Film condition) mood was shown to change whereby subjects became less depressed following treatment. No change in cognitions of subjects involved in this condition was evident.

When the present findings are integrated into Beck's theory it can be seen that cognitive change was not a necessary and sufficient condition for mood change to occur in clinically depressed individuals. The major finding of interest in this respect was that, despite attitudes characterized as strongly negative, overly critical, and filled with self-blame, clinically depressed people were able to perceive humor and experience a temporary elevation of mood. This finding is particularly important given the absence of any significant change in cognition over time for these subjects. It was only when dysfunctional cognitions were altered along with mood, that any significant change occurred in the former variable. Hence, Beck's primacy notion of cognition over mood was not confirmed.

Unlike interpretations made by investigators of prototypic mood induction research, the relationship between mood and cognition was not demonstrated to be reciprocal in nature in the present study. In order for the relationship to be considered as such, a change in any one variable (e.g., mood or cognition) should effect changes in the other. For subjects exposed to the comedy film, mood changed, but

cognitions remained relatively unaffected.

What may be inferred from the present findings is an interpretation more consistent with Zajonc' (1984) view of the relationship between mood and cognition. Unlike Beck, Zajonc hypothesized that, at times, mood and cognition act as separate and partially independent systems in which mood can be generated without a prior cognitive process and vice versa. In the present study, when the Examiner altered mood through a procedure that did not simultaneously alter cognition, mood alone was affected; when the intervention impacted upon cognitions and mood, then both undergo change. With respect to Zajonc' view, these changes are independent of each other such that a change in mood alone did not necessarily effect significant changes in cognition, unless a specific cognitive-based intervention was also present.

In summary, depressed subjects in the present study were seen to manifest significantly more dysfunctional modes of thinking that included elements of cognitive distortion and negative bias as compared to nondepressed individuals. What succeeded in altering cognitions for these subjects was a procedure in which positive thoughts were introduced, vis-a-vis written statements, that countered their negative, illogical assumptions. It was shown that this procedure was associated with not only a temporary reversal of cognitions, but a positive shift in mood as well. Thus, this study has implications for treatment, in that procedures designed to impact upon dysfunctional cognitions (e.g., Velten technique) may be considered an adjunct to ongoing therapy.

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Table 1

Summary of 3-way Mixed Analyses of Variance with Simple Main Effects for Males and Females

Source	Sum of Squares	df	ms	F
Depression				
Condition	478.23	3	159.41	1.43
at pre	501.70	3	167.23	2.46
at post	213.08	3	71.03	1.05
Diagnosis	6024.45	1	6024.45	53.90****
at pre	4024.71	1	4024.71	59.27****
at post	2145.98	1	2145.98	31.60****
Condition x Diagnosis	685.90	3	228.63	2.05
Between Subjects (error)[a]	13970.58	125	111.77	
Time	612.21	1	612.21	25.45****
for Velten condition	378.58	1	378.58	15.74****
for Comedy Film condition	422.05	1	422.05	17.55****
for Velten Neutral condition	11.98	1	11.98	0.50
for Neutral Film condition	36.20	1	36.20	1.51
for depressed	678.63	1	678.63	28.22****
for nondepressed	79.82	1	79.82	3.32
Condition x Time	236.52	3	78.84	3.28*
Diagnosis x Time	146.25	1	146.25	6.08*
Condition x Diagnosis x Time	149.22	3	49.74	2.07
Within Subjects (error)	3006.39	125	24.05	

Table 1 (continued)

Source	Sum of Squares	df	ms	F
Cognition				
Condition	37035.50	3	12345.17	0.94
at pre	11019.96	3	3673.32	0.54
at post	38954.47	3	12984.82	1.90
for depressed	61285.88	3	20428.63	1.56
for nondepressed	99608.81	3	33202.94	2.54
Diagnosis	356881.69	1	356881.69	27.30****
for Velten condition	33754.69	1	33754.69	2.58
for Comedy Film condition	5376.38	1	5376.38	0.41
for Velten Neutral condition	189792.75	1	189792.75	14.52****
for Neutral Film condition	251819.56	1	251819.56	19.27****
Condition x Diagnosis	123851.13	3	41283.71	3.16*
Between Subjects (error)[a]	1633876.00	125	13071.01	
Time	11951.11	1	11951.11	19.04****
for Velten condition	23254.98	1	23254.98	37.05****
for Comedy Film condition	777.31	1	777.31	1.24
for Velten Neutral condition	81.98	1	81.98	0.13
for Neutral Film condition	773.26	1	773.26	1.23
Condition x Time	12938.94	3	4312.98	6.87**
Diagnosis x Time	1036.41	1	1036.41	1.65
Condition x Diagnosis x Time	518.21	3	172.74	0.28
Within Subjects (error)	78453.88	125	627.63	

[a]Conservative error term for simple effects involving time by Satterthwaite (1946) approximation was used.

*p <.05

**p <.01

***p <.001

****p <.0001

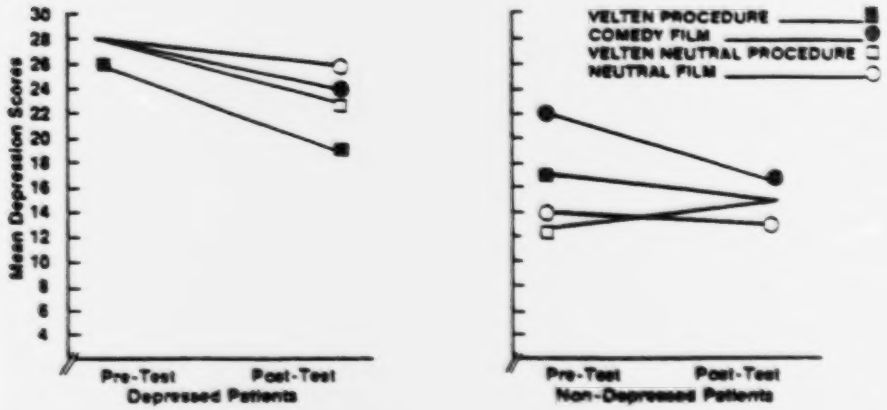

Figure 1. Mean pre- and post-test scores from the subscales of the Multiple Affect Adjective Checklist by diagnostic group.

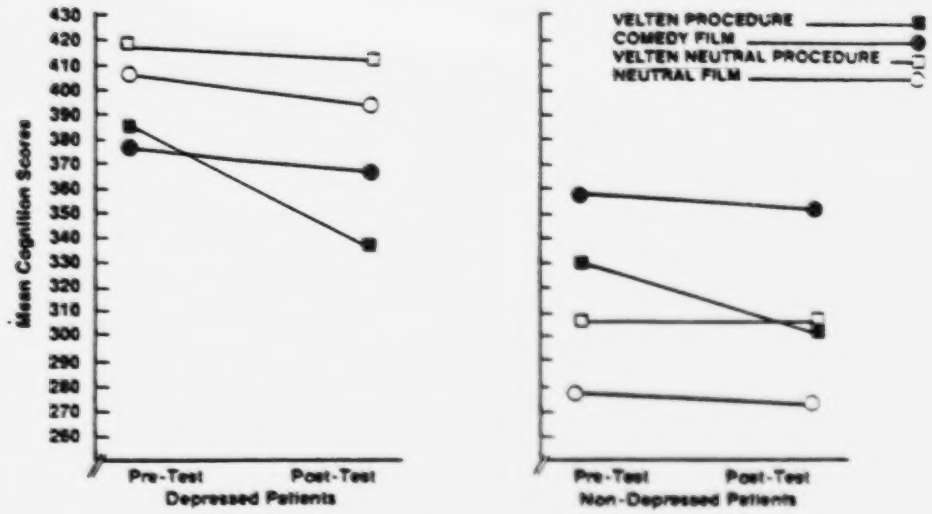

Figure 2. Mean pre- and post-test scores from the Dysfunctional Attitude Scale by diagnostic group.